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10/068,270	02/06/2002	William B. Ribbens	9620010.APP	9717

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BREIMAYER LAW OFFICE
Suite 206
1221 Nicollet Mall
Minneapolis, MN 55403

EXAMINER

KRAMER, DEVON C

ART UNIT	PAPER NUMBER
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3683

DATE MAILED: 09/09/2003

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/068,270

Applicant(s)

RIBBENS ET AL.

Examiner

Devon C Kramer

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 11 July 2003.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-29 is/are pending in the application.
- 4a) Of the above claim(s) 6,12,13,15,21,27 and 28 is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-5 and 7-11, 16-20, 22-26 is/are rejected.
- 7) ☒ Claim(s) 14 and 29 is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on _____ is: a) ☐ approved b) ☐ disapproved by the Examiner.
- If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

- 13) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
- a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449) Paper No(s) 4.
- 4) ☐ Interview Summary (PTO-413) Paper No(s) _____.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: _____.

DETAILED ACTION

Election/Restrictions

1) Applicant's election with traverse of species 5 in Paper No. 6 is acknowledged. The traversal is on the ground(s) that the examiner was in error when citing that there was no generic claim in the election and applicant argues that the number of species is not unreasonable and should be examined. With respect to the generic claims, applicant's response has required the examiner to consider claims 1 and 16 generic. With regard to applicant requesting all the species be examined, this is not found persuasive because each of the species contain different steps and each has a different use, and are therefor patentably distinct.

The requirement is still deemed proper and is therefore made FINAL.

2) Claims 6, 12-13, 15, 21 and 27-28 withdrawn from further consideration pursuant to 37 CFR 1.142(b), as being drawn to a nonelected species, there being no allowable generic or linking claim. Applicant timely traversed the restriction (election) requirement in Paper No. 6.

Claim Rejections - 35 USC § 112

3) The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

4) Claims 9, 11 and 24 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Claims 9 and 24 recites the limitation "the maximum wheel angular speed" in line 7. There is insufficient antecedent basis for this limitation in the claim.

Claims 9 and 24 recites the limitation "the minimum wheel angular speed" in line 9. There is insufficient antecedent basis for this limitation in the claim.

Claim 11 recites the limitation "the off-command braking control signal" in line 3. There is insufficient antecedent basis for this limitation in the claim.

Claim 11 recites the limitation "the on-command braking control signal" in line 6. There is insufficient antecedent basis for this limitation in the claim.

Claim Rejections - 35 USC § 102

5) The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

6) Claims 1-5, 7-8, 10-11, 16-20, 22-23, and 25-26 are rejected under 35 U.S.C. 102(b) as being anticipated by Ono et al (6122585).

In reference to claims 1 and 16, Ono et al provides an improved method for optimizing wheel slip of a land or aircraft vehicle with respect to a ground surface to maximize braking performance of a wheel-mounted tire against a ground surface during application of the wheel brake by an operator of the vehicle comprising: measuring wheel angular speed (10); processing the measured wheel angular speed in a sliding

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mode observer to calculate an estimated differential wheel torque (abstract), wherein said differential wheel torque represents the difference between wheel drag torque, generated at the interface of the tire and the ground surface, and applied braking torque; generating a threshold differential wheel torque from measured wheel angular speed (col. 6 line 58 - col. 7 line 15); generating a braking control signal from comparison of the estimated differential wheel torque and the threshold differential wheel torque; and applying the braking control signal to a brake actuator as an applied braking torque so as to optimize wheel slip during braking.

In reference to claims 2 and 17, Ono et al provides a method, wherein the brake actuator is responsive to an off-command braking control signal by interrupting the application of the wheel brake by the vehicle operator and is responsive to an on-command braking control signal by not interrupting the application of the wheel brake by the vehicle operator, and wherein: the step of generating the braking control signal comprises generating an off-command braking control signal whenever the generated differential wheel torque is less than the threshold differential wheel torque and an on-command braking control signal whenever the generated differential torque is greater than the threshold differential wheel torque. (Figure 27)

In reference to claims 3 and 18, Ono et al provides a method, wherein the applying step comprises converting the braking control signal into a scaled analog actuator control current by low pass filtering to smooth the on-command braking control signal and the off-commands braking control signal such that the applied braking torque generated by the actuator to alter the wheel slip is, or rapidly approaches, zero

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whenever the braking control signal exhibits the off-command and is, or rapidly approaches, a non-zero value whenever the braking control signal exhibits the on-command. (Col. 43 lines 57-68)

In reference to claims 4-5 and 19-20, Ono et al provides a method wherein the braking actuator is one of an electro-mechanical brake actuator and a hydraulic brake actuator.

In reference to claims 7 and 22, Ono et al provides a method, wherein the step of generating a threshold differential wheel torque comprises selecting a fixed threshold differential wheel torque appropriate to the vehicle. Please note that because of weight and other vehicle characteristics the threshold differential wheel torque has to be specific or in a specific range for each vehicle.

In reference to claims 8, 10, 23 and 25, Ono et al provides a method, wherein the step of generating a variable threshold differential wheel torque comprises: generating a skid signal from the measured wheel angular speed that is at zero in the absence of wheel slip and is at a numeric value proportional to wheel slip when wheel slip occurs; determining whether the skid signal is increasing, signifying increasing wheel slip, and increasing the threshold differential wheel torque favoring reduced braking in response thereto; and determining whether the skid signal is decreasing, signifying decreasing wheel slip, and decreasing the threshold differential wheel torque favoring increased braking in response thereto. (Figure 24)

In reference to claims 11 and 26, Ono et al provides a method, wherein the step of generating a braking control signal comprises: generating the off-command braking

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control signal that commands the brake actuator to interrupt application of the brake to the wheel when the estimated differential wheel torque falls below the threshold differential wheel torque; and generating the on-command braking control signal that does not command the actuator to interrupt application of the brake to the wheel when the estimated differential wheel torque falls below the threshold differential wheel torque. (Figure 27)

Allowable Subject Matter

7) Claim 9 and 24 would be allowable if rewritten to overcome the rejection(s) under 35 U.S.C. 112, second paragraph, set forth in this Office action and to include all of the limitations of the base claim and any intervening claims.

8) Claim 14 and 29 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

Conclusion

9) The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. Kumar et al, Shehan et al, Abe et al, Schneider et al, Salman, Chabbert, Hrovat et al, Konaga et al, Saito et al, Miyazaki, Shirai et al, Grote et al, and Anwar all provide a torque estimation derived from wheel speed. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Devon C Kramer whose telephone number is 703-305-0839. The examiner can normally be reached on Mon-Fri 8-4.

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10) If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Jack Lavinder can be reached on 703-308-3421. The fax phone number for the organization where this application or proceeding is assigned is (703) 872-9306.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is 703-308-1134.

DK

Deon
4-26-03